1888
Cadwell
GB-02-1889
AU 257 38902
GB 0005176
FEB 1889

FIG: 1.

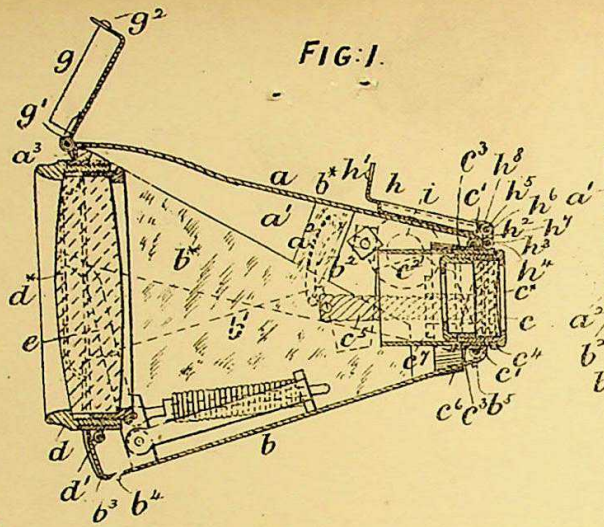

FIG: 2.

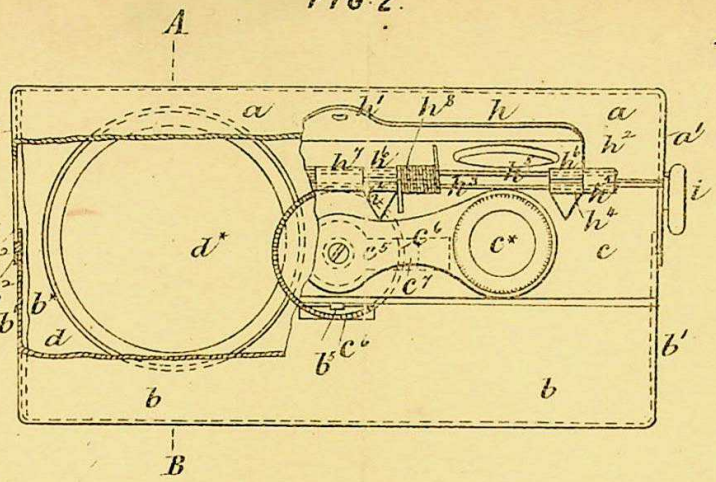

FIG: 4

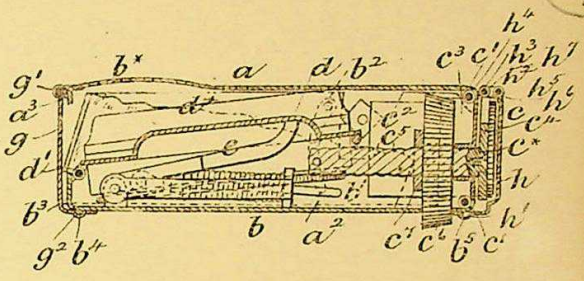

FIG: 3.

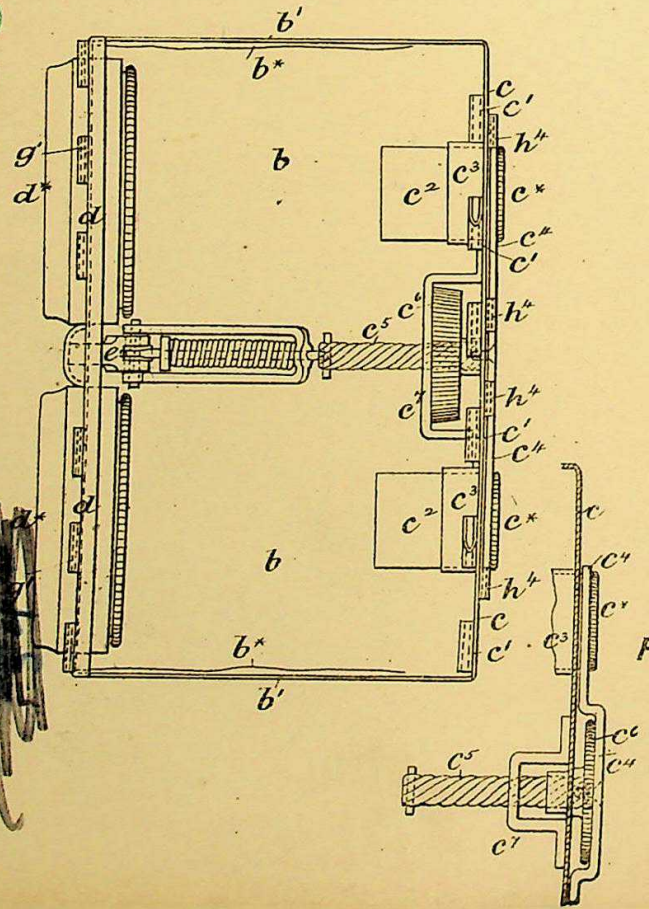

FIG: 6.

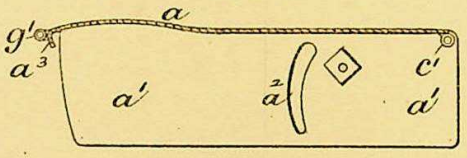

FIG: 7.

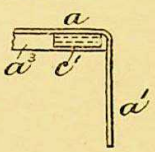

FIG: 5.

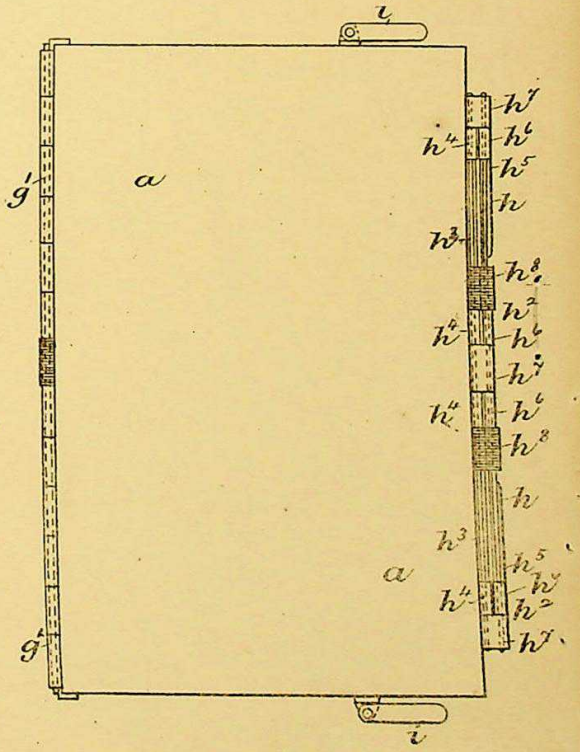

FIG: 8.

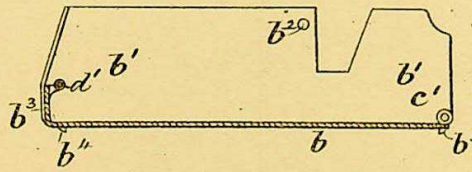

FIG: 9.

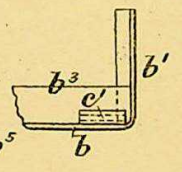

FIG: 10.

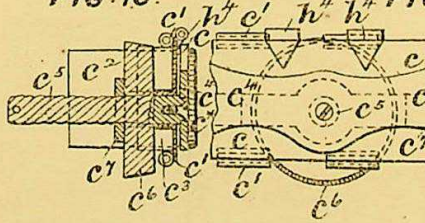

FIG: 11.

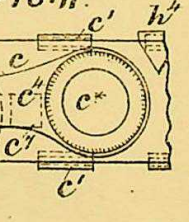

FIG: 12

FIG: 13.

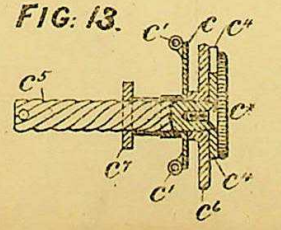

FIG. 20.

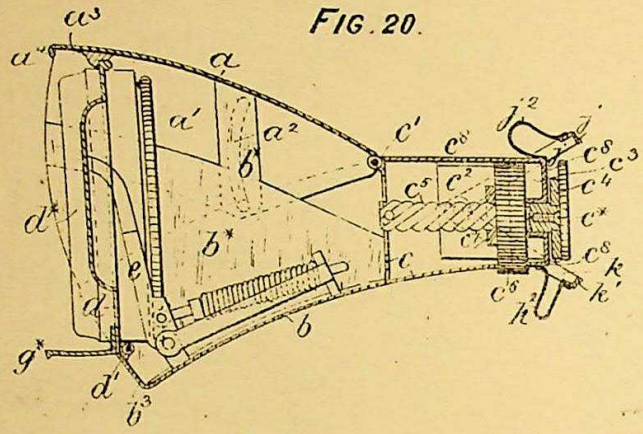

FIG. 21.

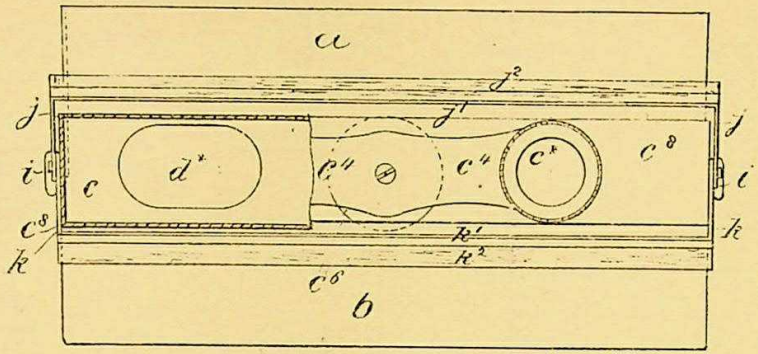

FIG. 23.

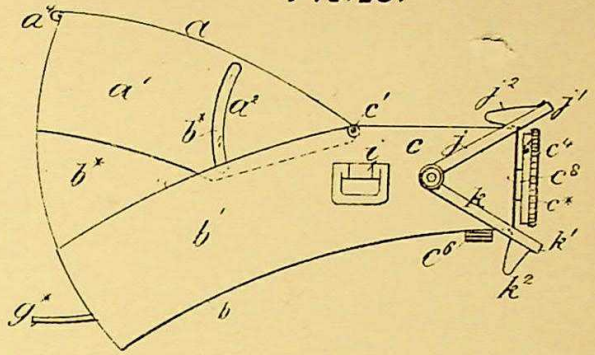

FIG. 22.

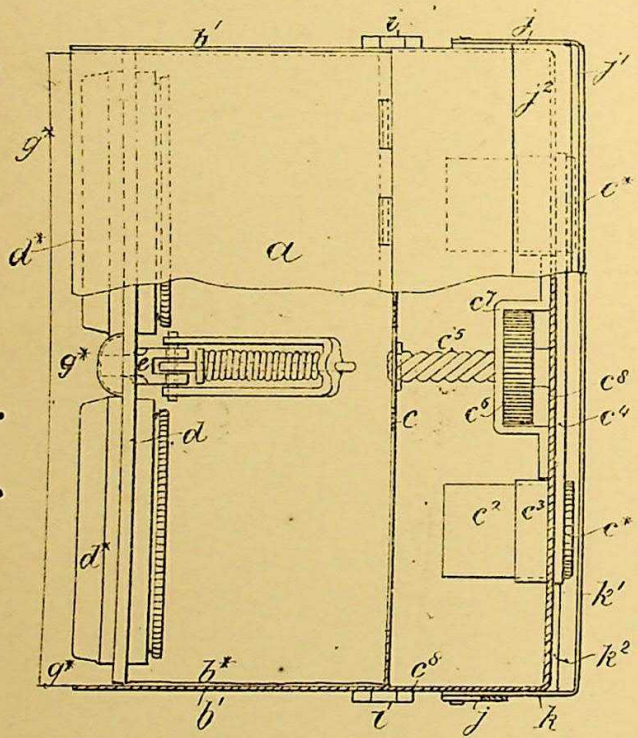

FIG. 24.

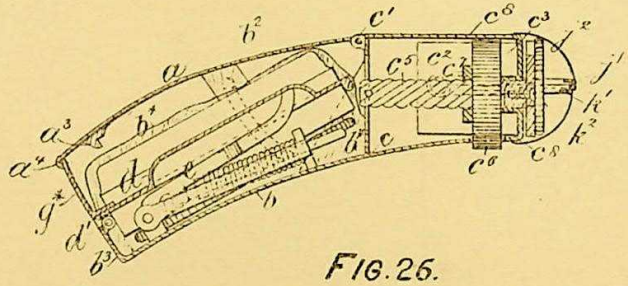

FIG. 25.

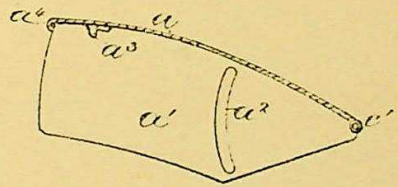

FIG. 26.

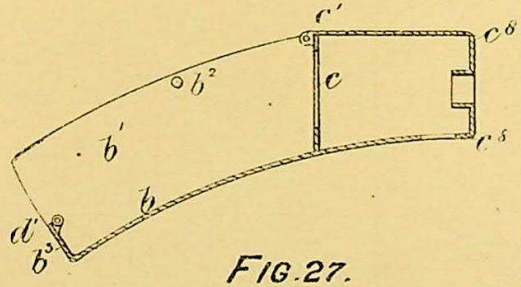

FIG. 27.

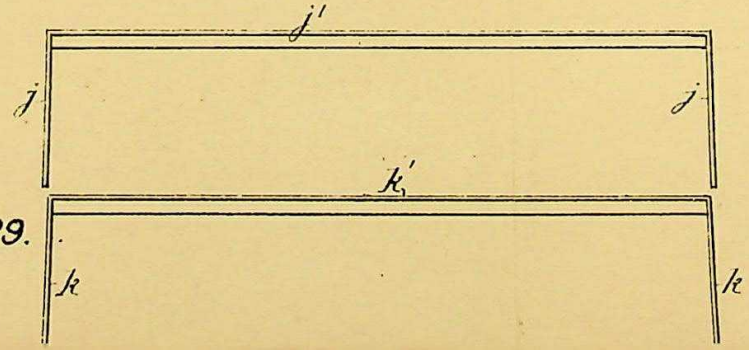

FIG. 28.

FIG. 29.

FIG. 30.

Telescopes

Date of Application, 7th Apr., 1888
Complete Specification Left, 7th Jan., 1889
Complete Specification Accepted, 23rd Feb., 1889

A.D. 1888, *7th April.* N° 5176.

PROVISIONAL SPECIFICATION.

Improvements in Opera, Field, and Marine Glasses.

I, William Alexander Cardwell of The Moat Croft, Eastbourne, in the County of Sussex, Lieutenant Colonel of Volunteer Artillery, do hereby declare the nature of this invention to be as follows :—

My invention relates to improvements upon an invention for which I obtained Provisional Protection dated December 12th 1887 No. 17107.

For this purpose, and as described in the specification accompanying my application for the said Provisional Protection, I employ a framework of any suitable material provided with a rigid top and bottom and flexible sides.

Instead however of hinging both of the ends carrying the lenses to the top or bottom, or to parts carried thereby, as described in my said Provisional Specification, I, according to my present invention, hinge only the front end to the top or bottom, so that it will be capable of folding thereon and I make the rear end a fixture but hinge it to both bottom and top to allow of the instrument being compressed and I cause it to carry the back lenses, which are of small diameter and are fitted into eye pieces in the usual manner.

These back lenses are capable of receiving motion through a milled wheel and connections in the usual manner in order to adjust the instrument to the required focus.

When the instrument is in use the front end thereof is placed in a vertical position and there held by any suitable means and thus expands and retains the instrument in proper form, but when out of use the front end will be folded down upon the top or bottom of the frame when the instrument may be compressed and caused to assume a convenient form for carrying in the pocket.

If desired hinged or other shutters or covers may be employed to close the front and rear of the instrument when in its folded condition.

By means of my present invention I simplify the construction of the instrument, reduce the weight thereof, and render it easier of manipulation.

Dated this 7th day of April 1888.

WILLIAM ALEXANDER CARDWELL.

By Harris & Mills,
23, Southampton Buildings,
Agents.

[*Price* 11*d.*]

COMPLETE SPECIFICATION.

Improvements in Opera, Field, and Marine Glasses.

I, WILLIAM ALEXANDER CARDWELL of The Moat Croft, Eastbourne, in the County of Sussex, Lieutenant Colonel of Volunteer Artillery, do hereby declare the nature of this invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement :—

My invention relates to improvements upon an invention for which I obtained Letters Patent dated December 12, 1887, No. 17107.

For this purpose, and as described in the specification of my aforesaid patent, I employ a framework of any suitable material, provided with a rigid top and bottom and flexible or folding sides.

Instead however of hinging both of the ends carrying the lenses to the top or bottom, or to parts carried thereby, as described in my said specification, I, according to my present invention, hinge only the front end to the top or bottom, so that it will be capable of folding thereon, and I make the rear end a fixture, but hinge it to both bottom and top, to allow of the instrument being compressed, and I cause it to carry the back lenses, which are of small diameter and are fitted into eye pieces in the usual manner.

In some cases the rear end is fixed rigidly to the bottom of the instrument, and the top is hinged to the upper edge of the rear end.

These back lenses are capable of receiving motion through a milled wheel and connections in the usual manner, in order to adjust the instrument to the required focus.

When the instrument is in use, the front end thereof is placed in a vertical position and there held by any suitable means, and thus expands and retains the instrument in proper form, but when out of use, the front end will be folded down upon the top or bottom of the frame, when the instrument may be compressed and caused to assume a convenient form for carrying in the pocket.

If desired, hinged or other shutters or covers may be employed to close the front and rear of the instrument when in its folded condition.

By means of my present invention I simplify the construction of the instrument, reduce the weight thereof, and render it easier of manipulation.

And in order that the said invention may be more clearly understood and readily carried into effect, I will proceed, aided by the accompanying drawings, more fully to describe the same.

DESCRIPTION OF THE DRAWINGS.

Figure 1 is a longitudinal section, taken on the line A B of figure 2, of an opera, marine or field glass constructed according to my present invention, showing the instrument expanded ready for use.

Figure 2 is a rear end view partly broken away, and figure 3 is a plan thereof, the top being removed in order more clearly to show some of the parts.

Figure 4 is a longitudinal section, and Figure 5 is a plan, showing the instrument as it would appear when folded and out of use.

Figure 6 is a longitudinal section of the top of the instrument and its descending flange and figure 7 is an end view showing a portion thereof, and figures 8 and 9 are similar views of the bottom of the instrument.

Figure 10 is a longitudinal section separately of the means for adjusting the eyepieces to the required focus, and figure 11 is a rear end view thereof.

Figure 12 is a sectional plan, and figure 13 is a section showing a slight modification in the arrangement of parts for adjusting the focus.

Figure 14 is a longitudinal section drawn on the line C D of figure 15 of a slightly modified construction of opera, field or marine glass constructed according to my present invention, showing the instrument expanded for use. Figure 15 is a rear end view thereof partly broken away, and figure 16 is a plan thereof with the top removed, in order to show some of the parts more clearly, and figure 17 is a longitudinal section of such modified form of instrument, as it would appear when folded for the pocket.

Figure 18 is a side elevation, and figure 19 is a rear end view of an instrument similar to that shown at figures 14 to 17, but showing a different arrangement of parts for covering the eye pieces when the instrument is folded.

Figure 20 is a longitudinal section of another slightly modified form of instrument, Figure 21 is a rear end view thereof with part broken away. Figure 22 is a plan with part of the top broken away. Figure 23 is a side elevation showing the instrument expanded for use. Figure 24 is a longitudinal section showing the instrument folded for the pocket. Figure 25 is a longitudinal section of the top of the instrument and its descending flange.

Figure 26 is a longitudinal section of the bottom or body of the instrument, and figures 27 and 28, and 29 and 30, are respectively, front and end views of the eye piece closing frames.

In all the figures like parts are indicated by similar letters of reference.

I will first describe the instrument represented at figures 1 to 11.

a represents the rigid top of the instrument, which is composed of metal or other suitable material, and is formed with descending flanges or sides a^1, and b represents the bottom of the instrument, which is composed of similar material and is formed with rising flanges or sides b^1, so arranged as to pass between the flanges a^1 of the top a when the instrument is folded and out of use.

When the instrument is expanded for use, the sides thereof are formed partly by the flanges a^1 and b^1 and partly by a triangular shaped piece of flexible material b^*, which is attached, by its lower edge, to the bottom b or to the flange b^1, and by its vertical edge, to the frame d, in order to close the space formed by the angular position of the flanges a^1 and b^1 when the instrument is expanded; or the flexible material may be otherwise arranged.

The upper flanges or sides a^1 are formed with curved slots a^2 therein, and the lower sides or flanges b^1 are provided with corresponding studs b^2 thereon, which take into the slots a^2 and thus limit the extent to which the top a and bottom b may be opened or forced apart; or other suitable means may be employed for this purpose.

The rear end c of the instrument, which carries the lenses c^*, is connected to both the top a and bottom b, by means of hinges c^1, in order to allow of the top and bottom being compressed or folded, and to permit the lenses c^* to assume a plane parallel to that of the lenses d^*, when the instrument is expanded.

The frame d, carrying the lenses d^*, is, by a hinge d^1, connected to a flange b^3 rising from the bottom b at the front end thereof, in order that such frame d may be folded down upon the bottom b when the instrument is folded or compressed, but such frame d is normally forced into a vertical position by means of a spring lever e, a descending flange a^3 upon the top a acting as a stop to arrest the frame d when it has arrived in its proper vertical position; or the spring lever might be dispensed with and the frame d might be raised into its vertical position by means of a cord or chain attached thereto.

The rear lenses c^* are mounted in tubes or fittings c^2, and such tubes c^2 are mounted, with capability of sliding, in bearings or collars c^3 carried by the frame c, and are connected together by means of a bar or plate c^4, in a similar manner to an ordinary opera or field glass.

The required adjustment of the lenses c^* for focussing is obtained in the customary way by means of a worm or screw c^5, which is, at one end thereof, rigidly connected to the bar or plate c^4, the other end being supported by a bearing c^7 fixed to the frame c.

A milled wheel c^6 is mounted on the worm c^5 between the bearing c^7 and the frame c with capability of being turned on the worm c^5, and the periphery of which wheel passes through a slot in the bottom b of the instrument, thereby affording the means for giving the required to and fro endway motion to the worm or screw c^5. Or the required focussing movement might be obtained by means of a rack fixed to the rear lens fitting and taken into by a pinion carried by some fixed part of the instrument and having upon its shaft a milled wheel or wheels.

The front of the instrument is furnished with a cap or cover g formed with a flange g^2 to act in connection with a catch b^4 on the bottom b, to close that end of the instrument when folded or compressed, as shown at figure 4, and this cap or cover g is connected with the top a of the instrument, by means of a spring hinge g^1, in such manner that when open such cap or cover is thrown back out of the way and there retained.

The rear of the instrument is similarly provided with a cap or cover h which is formed with a flange h^1 to act in connection with a catch b^5 upon the bottom b, but in this case the spring hinge h^2, which connects the cap or cover h with the top a, is preferably constructed in such manner that the cap or cover, when released from the catch b^5, will be thrown back flat upon the top a and there retained while the instrument is in use. In order to effect this object I preferably connect the cover h with the top a by means of a kind of double spring hinge, as represented in the drawing, one pin h^3 of such hinge being carried by leaves h^4 connected to the top a, and the other pin h^5 being carried by leaves h^6 connected to the cover h, the two pins being coupled or connected together at each end and at the centre thereof by links h^7; springs h^8 coiled around the pins h^3 and h^5 of the hinge h^2 exert a constant tendency to throw the cover h back upon the top a. Or the caps or covers g and h might, if desired, be connected to the instrument by ordinary hinges, in which case they would require to be turned back by hand.

The instrument is furnished with metal loops i, by means of which it may be connected with a shoulder strap for the purpose of easy carriage.

In the modification of the focussing apparatus represented at figures 12 and 13, the milled wheel c^6 is placed outside the rear end c of the instrument and between it and the bar or plate c^4, which is suitably shaped to receive it. By this means I avoid perforating the bottom b of the instrument to permit of the passage of the milled wheel.

In the modification represented at figures 14 to 17, the top a and bottom b are made shorter than in the construction described with respect to figures 1 to 13, and the rear lenses work outside of the rear end c in bearings or collars c^3 fixed to a frame c^8 fixed to the rear end c. In other respects these two modifications are similarly constructed, except that in this latter modification, the cover h is mounted on a plain spring hinge, instead of on a compound or double knuckled hinge, as in the former case.

In the modification represented at figures 18 and 19, I substitute for the hinged cover h, the following arrangement of parts. On each side of the top and bottom a. b. respectively of the instrument I form or rigidly fix levers j. k, carrying cross bars j^1 k^1, to which one edge of strips of leather or other flexible material j^2 k^2 is fixed, the other edge of such flexible material being fixed to the frame c^8.

In the modification represented at figures 20 to 30, the bottom b, rear end c and frame c^8 are all rigidly connected together, whilst the top a is hinged at c^1 to the rear end c, and the instrument is generally of a curved form to fit more closely to the body of the wearer. The various parts are otherwise of similar construction to those of the